

WE CLAIM

1. A process for producing biodiesel, wherein said process comprises the following steps:
 - a) After processing and drying a feed of oleaginous seeds, preparing in a reactor an homogeneous suspension of oleaginous seeds and an anhydrous alcohol in an amount of 4:1 to 0.5:1, at ambient temperature, so as to obtain an emulsion;
 - b) Adding an alkaline alkoxide catalyst to the emulsion obtained in a), the amount of catalyst being of from 0.1 to 5 wt% based on the weight of seeds, and allowing the transesterification reaction to occur during 30 to 90 minutes at temperatures between 30 and 78°C, so as to obtain the desired alkyl esters at 98-100% conversion;
 - c) By filtration, separating the alkyl ester products, obtaining a liquid phase and a solid phase;
 - d) From the liquid phase, withdrawing the alcohol by distillation and decanting the remaining phase, glycerin and the desired alkyl esters;
 - e) From the solid phase, drying and sieving, obtaining carbohydrates for fermentation or cattle feeding and hulls for fertilizer formulation.
2. A process according to claim 1, wherein the oleaginous seed is a sunflower, colza, soybean or peanut seed.
3. A process according to claim 1, wherein the oleaginous seed is a castor bean seed.
4. A process according to claim 1, wherein the seed to alcohol ratio is 1.5:1 to 0.5:1.
5. A process according to claim 1 wherein the catalyst is sodium or potassium ethanoate used in the amount of 1.5wt%
6. A process according to claim 1, wherein the reaction is carried out at 45-55°C during 40-60 minutes.
7. A process according to claim 1 wherein the alcohol used in said process is completely recycled.
8. A process according to claim 1 wherein the alkyl ester reaction products are neutralized and formulated into biodiesel suitable for use as fuel.
9. A process according to claim 1 wherein the carbohydrates recovered from the solid phase are sieved to separate a fine fraction, having a granulometry up to 20 mesh Tyler, rich in carbohydrates (89.5 wt%) that is a source of ethyl alcohol by a

conventional fermentation process.

10. A process according to claim 9, wherein the amount of ethyl alcohol obtained by the conventional fermentation process on the carbohydrates separated after the completion of the transesterification reaction is the amount required for performing the transesterification reaction.
11. A process according to claim 1, wherein the carbohydrates recovered from the solid phase and free from ricin when castor beans are used, are sieved to separate a fine fraction of up to 20 mesh Tyler granulometry, rich in carbohydrates (89.5 wt%), said fraction being utilized as cattle feed.
12. A process according to claim 11, wherein the coarser fraction obtained by sieving the solid phase having granulometry higher than 40 mesh Tyler is milled until an average grain size of 20 mesh, directed to fertilizer formulation and recycled to the castor bean seed culture.
13. A process according to claim 1 wherein the alkyl esters reaction products are neutralized and formulated as co-solvents in diesel and gasoline admixtures with anhydrous or hydrated ethyl alcohol.